

C1
source [dissolved] suspended in the aqueous medium, the [calcium hydroxide]
calcium ion source in the suspension delivered to the series of static in-line mixers
being progressively consumed and converted to calcium carbonate as the suspension
passes through the series.--

REMARKS

I. STATUS OF THE CLAIMS

Claims 1-22 are currently pending. Applicant thanks the Office for withdrawing the Section 103 rejection over Kosin et al. (U.S. Patent No. 4,888,160) in view of Bleakley (EP 0 604 095).

II. SPECIFICATION

The Office has objected to the Abstract for not accurately describing the presently claimed invention. Office Action at 2. Applicant has amended the Application as requested and, thus, submits the objection has thus been rendered moot.

III. SECTION 112, FIRST PARAGRAPH REJECTIONS

The Office has rejected claims 1-22 under 35 U.S.C. § 112, first paragraph, for containing matter not described in the specification. First, the Office asserts that the "specification does not disclose 'channels' as recited by claim 1." Applicant respectfully disagrees with the Office.

Applicant submits that the term "channel" is adequately supported by the specification. Irrespective of whether or not the term "channel" is found in the specification, the M.P.E.P. explicitly states that Applicant is not required to use the same terminology in the claim as is used to describe the subject matter in the

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specification. See M.P.E.P. § 2163.02 ("The subject matter of the claims need not be described literally (i.e. using the same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement.")

Specifically, Applicant submits that the use of "conduit" in the specification provides written description support for the use of "channel" in the claims. Claim 1 was previously amended to identify the reactor type in which the recited process occurs. One of ordinary skill in the art would recognize that Applicant's specification refers to "conduit" to describe e.g., an exemplary reactor into which reactants are continuously or semi-continuously being delivered and product is continuously or semi-continuously extracted. See, e.g., pages 22-23 and Figure 1. Further, one of ordinary skill in the art would also recognize that by definition, the term "channel" encompasses the term "conduit," as used in the specification. The American Heritage College Dictionary, 234 (3rd Ed. 1997) (channel - "a tubular passage for liquids; a conduit"). Accordingly, whether Applicant referred to "conduit," "pipe," "channel," etc. in the claims, one of ordinary skill in the art would recognize that Applicant's claims recite subject matter that was invented by Applicant. See M.P.E.P. § 2163.02. Hence, Applicant respectfully requests this rejection be withdrawn.

Second, the Office asserts that the specification does not support "calcium ion source," as used in claims 1, 20, 21, and 22.¹ The Office correctly notes that page 9 of

¹ While the Examiner has stated that "calcium ion source" is new matter, Applicant assumes that the Examiner intended to argue lack of written description support. M.P.E.P. § 2163.01 states that a new matter rejection is improper under these circumstances.

the specification recites "calcium ions;" however, Applicant did not intend the claims to be limited to the addition of only calcium ions, rather to include the addition of a source of such calcium ions. Applicant submits that one of ordinary skill in the art would recognize that calcium ions, of necessity and logic, come from a "source." For example, as originally claimed, claim 1 recited the introduction of calcium hydroxide, as explained on page 11, line 21 through page 12, line 3. In addition, the specification explains the calcium ions for the reaction may enter the reactor as calcium oxide, which is then slaked. Page 11, lines 24-25.

As noted above, the M.P.E.P. does not require the phrase "calcium ion source" to be found in the specification. See M.P.E.P. § 2163.02 It is enough that one skilled in the art would recognize that the subject matter was invented by Applicant. Applicant submits that one skilled in the art would recognize that the specification supports the concept of a "calcium ion source" in view of the above specification citations. Hence, Applicant respectfully requests this rejection be withdrawn.

IV. SECTION 112, SECOND PARAGRAPH REJECTION

The Office has rejected claim 22 under 35 U.S.C. § 112, second paragraph as indefinite. Specifically, the Office has asserted the claim to be indefinite because it appears that Markush language was intended. Office Action at 3. Applicant respectfully traverses this rejection.

First, Applicant submits that the form of the Office's rejection is improper. The M.P.E.P. explicitly states that when considering Section 112, second paragraph, "[t]he Examiner's focus . . . is whether the claim meets the threshold requirements of clarity

and precision, ***not whether more suitable language or modes of expression are available.***" M.P.E.P. § 2173.02 (emphasis added). Here, the Office has yet to offer any reasoning as to how Applicant's claim language, "chosen from A, B, and C," lacks clarity and/or precision and, thereby, renders claim 22 indefinite. See *Ex parte Balzarini*, 21 U.S.P.Q.2d 1892, 1898 (Bd. Pat. App. & Int. 1991) (reversing Examiner because "[t]he examiner has not articulated any reason why one of ordinary skill in the art would have any difficulty ascertaining the metes and bounds of these claims."). It is simply not enough to say that Markush language, "selected from the group consisting of A, B, and C," could have been used. See M.P.E.P. § 2173.02.

Second, Applicant's decision not to use Markush language cannot be a basis for rejection, since Markush language is not required by the Courts or the rules of the Office. According to the M.P.E.P., Markush language is not the only permissible language for alternative expressions. The M.P.E.P. states that "[a]lternative expressions are permitted if they present no uncertainty or ambiguity with respect to the question of scope or clarity of the claims." M.P.E.P. § 2173.05(h). In fact, the M.P.E.P. is carefully worded and states that "selected from the group consisting of A, B, and C" is only "***one*** acceptable form of alternative expression." *Id.* (emphasis added). The M.P.E.P. goes on to say that "[w]hen material recited in a claim are so related as to constitute a proper Markush group, they ***may*** be recited in the conventional manner, ***or alternatively.***" *Id.* (emphasis added). For example, the M.P.E.P. has suggested that "selected from A, B, and C" and "is A or B" are equally proper alternative claim language forms. M.P.E.P. Appendix AI at p. AI-62 (2001) (Example 20 - "wherein R¹ is methyl or phenyl, X and Z are selected from oxygen (O) and sulfur (S)") (courtesy copy attached).

In light of the examples of proper alternative claim language provided by the Office and the lack of argument to the contrary, there is no basis for the Office to require Applicant to change the claim language of the pending claims. Accordingly, Applicant respectfully submits that this rejection under 35 U.S.C. § 112, second paragraph, is in error, and should be withdrawn.

V. SECTION 103(a) REJECTIONS

(A) The Office has rejected claims 1-12, 19, and 22 under 35 U.S.C. § 103(a) as being unpatentable over WO 96/23728 ("Laine I") or FI 60183 B ("Laine II") or Laine, "Manufacturing of Precipitated Calcium Carbonate" (Laine III), each in view of U.S. Patent No. 5,846,500 (Bunger et al.) for the reasons disclosed at pages 4-8 of the Office Action. Applicant respectfully traverses this rejection for at least the reasons presented below.

Applicant's invention is not obvious over Laine I, Laine II, or Laine III in view of Bunger et al. As an initial matter, a *prima facie* case of obviousness requires three basic criteria to be met. M.P.E.P. § 2142. First, the Office must establish that Laine I, Laine II, or Laine III with Bunger et al. teach or suggest all the claim limitations. See M.P.E.P. § 2143.03. Second, the Office must establish that some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, exists to combine and/or modify the references. See M.P.E.P. § 2143.01. Finally, the Office must establish a reasonable expectation of success from the required combination and/or modification. See M.P.E.P. § 2143.02.

In the present case, at a minimum, there is no evidence of: (i) a suggestion or

motivation to combine/modify the teachings of the references and (ii) a reasonable expectation of success for the suggested combination/modification.

The Office has admitted that none of the three Laine references discloses a process that occurs in a channel. Office Action at 4, 5, and 7. The Office relies upon Bungler et al.'s disclosure of plug flow reactors with in-line mixers to correct the deficiencies of the three Laine references. Office Action at 4, 5, and 7. Applicant submits that there is no motivation or suggestion in the art, generally, or in the four references cited, specifically, to modify the teachings of Laine I, Laine II, or Laine III to incorporate a channel reactor and in-line mixers.

It is apparent that the Office has not met its burden of providing factual evidence in support of its obviousness rejection. The Federal Circuit has recognized that "the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999), *abrogated on other grounds by In re Gartside*, 203 F.3d 1305, 53 U.S.P.Q.2d 1769 (Fed. Cir. 2000). The Federal Circuit has unambiguously held: "'Common knowledge and common sense,' even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority." *In re Lee*, 61 U.S.P.Q.2d 1430, 1435 (Fed. Cir. 2002). The Federal Circuit has also clearly admonished:

[T]he deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is 'basic knowledge' or 'common sense' to one of ordinary skill in the art. . . . We cannot accept these findings by the Board. This assessment of basic

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knowledge and common sense was not based on any evidence in the record and, therefore, lacks substantial evidence support.

In re Zurko, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001).

At no time has the Office cited a page or column in a reference in support of its assertions for motivation to combine or modify the teachings of Laine I, Laine II, or Laine III. The Office has asserted a motivation exists for the two changes because the four references teach a continuous process and "mixers with vanes . . . [result] in better mass transfer due to more uniform dissolution of bubbles in the reaction." Office Action at 5-8. However, there is no support for these assertions.

First, Laine I is not directed to a continuous process. Laine I explicitly conducts the process in stages, where one stage is stopped before the second begins; there is no continuous movement from one stage to the next. Page 4, lines 15-20; page 12, lines 6-20.

Second, the Office has provided no evidence that one of ordinary skill in the art would be necessarily motivated by the fact that the remaining references allegedly disclose continuous processes. The mere fact that the references are directed to the same subject matter, here continuous processes, does not by itself equal a motivation to combine. See *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). It simply establishes the art as analogous; a wholly separate and distinct burden placed on the Office. Further, according to M.P.E.P. § 2143.01, the mere fact that references could be modified or combined is also not a motivation to do so. See also, *In re Gordon*, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). "When determining the patentability of a claimed invention which combines two known elements, 'the question is whether there is

something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.” *In re Beattie*, 24 U.S.P.Q.2d 1040, 1042 (Fed. Cir. 1992) (emphasis added). There is **no** evidence of desirability on record, only opinion.

Third, none of the references teaches or suggests the advantages of in-line mixers over the rotating and/or impacting mixers of Laine I, Laine II, and Laine III. The only reference of record that discloses in-line mixers is Bunger et al., except for Applicant’s specification, which cannot be considered. Bunger et al. provides no motivation. The reference merely identifies the differences in mixer type as radial versus axial mixing. Col. 7, lines 1-13. Again, the mere fact that references could be modified or combined is also not a motivation to do so. M.P.E.P. § 2143.01.

Fourth, the process of Bunger et al. and the process of Laine I are incompatible and, therefore, there can be no motivation to apply the channel reactor/in-line mixer teachings of Bunger et al. Bunger et al.’s process is limited in application to solution reactions, i.e., reactions where the $\text{Ca}(\text{OH})_2$ is dissolved, rather than suspended in a slurry. Col. 3, line 45 - col. 4, line 65. In contrast, Laine I is directed to slurry/suspension reactions. Laine I at p.2, line 3, p.9, lines 24-27, 29, p. 13, lines 5-9. Bunger et al. explicitly teaches that there is no motivation to apply its plug flow teachings to slurry reactions. Col. 4, lines 54-58.

Similarly, Applicant submits that Laine II and Laine III are also directed to slurry reactions, which are the norm. See Bunger et al. at col. 3, lines 46-49. To the extent Laine II and Laine III are directed to slurry reactions, Bunger et al. teaches that there is no motivation to modify their teachings. Even if Laine II and Laine III were to suggest a

solution reaction, Applicant submits that the resultant combination does not render Applicant's invention obvious. As stated in the claims, Applicant's invention is limited to aqueous suspension reactions. If Laine II and Laine III were directed to solution reactions, one of ordinary skill in the art would logically expect any combination of Bunger et al. and Laine II or Laine III to also be a solution reactor. Bunger et al. at col. 4, lines 54-58.

Finally, there is no evidence of a reasonable expectation of success from the suggested combination/modification. First, the Office has failed to offer any evidence that one skilled in the art would reasonably expect the suggested changes to the teachings of Laine I, Laine II, and/or Laine III to succeed. There is simply no evidence, let alone argument, that the resultant process will be successful.

Second, evidence of reasonable expectation of success must be in the form of facts and not opinions expressed by the Office. The Federal Circuit has explained that "[w]ith respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or expertise . . . Rather, the Board must point to some concrete evidence in the record in support of these findings." *In re Zurko*, 258 F.3d 1379, 1385, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001) (emphasis added).

Third, the evidence of records dictates that the proposed modifications of Laine I, Laine II, and Laine III will not succeed. If Laine I, Laine II, and Laine III are directed to typical **slurry** reactions, as Applicant believes, to form precipitated calcium carbontate, then there is no expectation of success, only an expectation of problems. Bunger emphatically teaches that slurry reactions and solution reactions are different and that

solution reactions have distinct advantages over slurry reactions. Col. 3, line 45 - col. 4, line 65. In fact, Bunger et al. **teaches away** from the application of its plug-flow system, *i.e.*, channels with in-line mixers, to slurry/suspension reactions such Laine I, Laine II, Laine III, and Applicant. Col. 4, lines 54-58.²

In view of the teachings of Bunger et al., which is the only evidence of record, one of ordinary skill in the art would recognize the disparities between slurry reactions and slurry reactions and not expect the proposed modifications to Laine I, Laine II, and Laine III's solution reactions to succeed.

Accordingly, Applicant submits that the Office has not met its burden to establish a prima facie case of obviousness and respectfully requests withdrawal of the rejection.

(B) The Office has rejected claims 1- 22 under 35 U.S.C. § 103(a) as being unpatentable over WO 96/23728 or FI 60183 B or Laine, "Manufacturing of Precipitated Calcium Carbonate," each in view of U.S. Patent No. 5,846,500 (Bunger et al.) and further in view of EP 0 604 095 for the reasons disclosed at pages 4-8 of the Office Action. The only difference between this rejection and the previous rejection is the Office's reliance on EP 0 604 095 to provide the alleged motivation to modify the processes of Laine I, Laine II, and Laine III to include non-consumable solids. Office Action at 9. Accordingly, Applicant respectfully traverses this rejection for the reasons set forth above with regard to rejection (A) and incorporated fully herein by reference.

² If Laine II and Laine III are atypical solution reactions, then the combination logically can only be another solution reaction, which Bunger et al teaches cannot render Applicant's claims obvious because Applicant's claims recite reactions of aqueous suspensions; not solutions.

Applicant submits that the Office has not met its burden to establish a prima facie case of obviousness and respectfully requests withdrawal of the rejection.

VI. CONCLUSION


In view of the foregoing amendments and remarks, Applicant respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
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Dated: May 14, 2003

By: 
Anthony A. Hartmann
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Enclosures: The American Heritage College Dictionary, 234 (3rd Ed. 1997);
M.P.E.P. Appendix A1 at p. A1-62 (2001)

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Appendix: Version With Markings To Show Changes Made

IN THE ABSTRACT:

A method of continuously or semi-continuously producing a solid product comprising precipitated calcium carbonate in an aqueous medium which method comprises delivering an aqueous suspension of [calcium hydroxide] a calcium ion source in sequence through a series of at least two static in-line mixers whilst carbon dioxide is introduced into the suspension at or before each of the mixers whereby carbon dioxide and the aqueous suspension are intimately mixed in each mixer to facilitate reaction of the carbon dioxide with [calcium hydroxide] the calcium ion source [dissolved] suspended in the aqueous medium, the [calcium hydroxide] calcium ion source in the suspension delivered to the series of static in-line mixers being progressively consumed and converted to calcium carbonate as the suspension passes through the series.

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